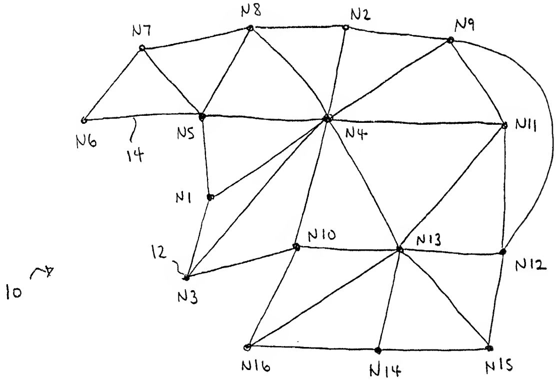


FIG. 1A

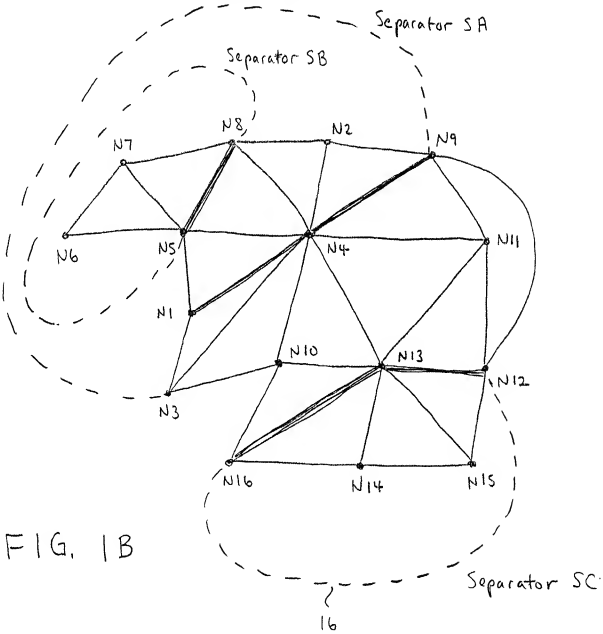

Separator SA
Separator SB
N7
N8
N2
N9
N6
N5
N4
N11
N1
N10
N13
N12
N3
N16
N14
N15
Separator SC
16

FIG. 1B

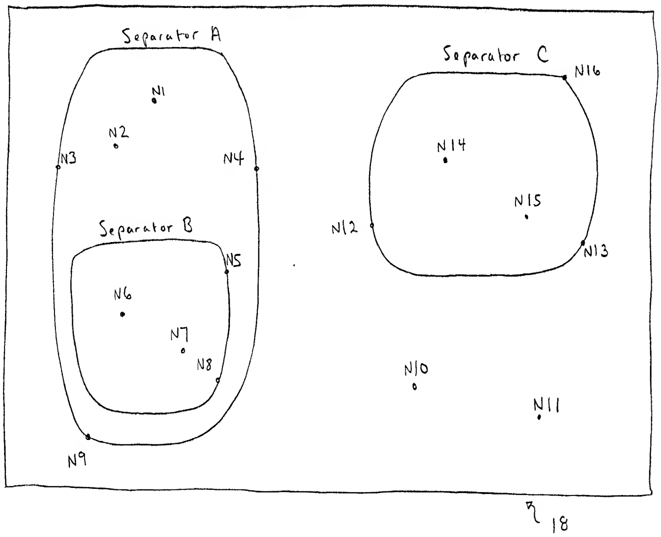

Separator A
N1
N2
N3
N4
Separator B
N5
N6
N7
N8
N9
Separator C
N16
N14
N15
N12
N13
N10
N11
18

FIG. 2

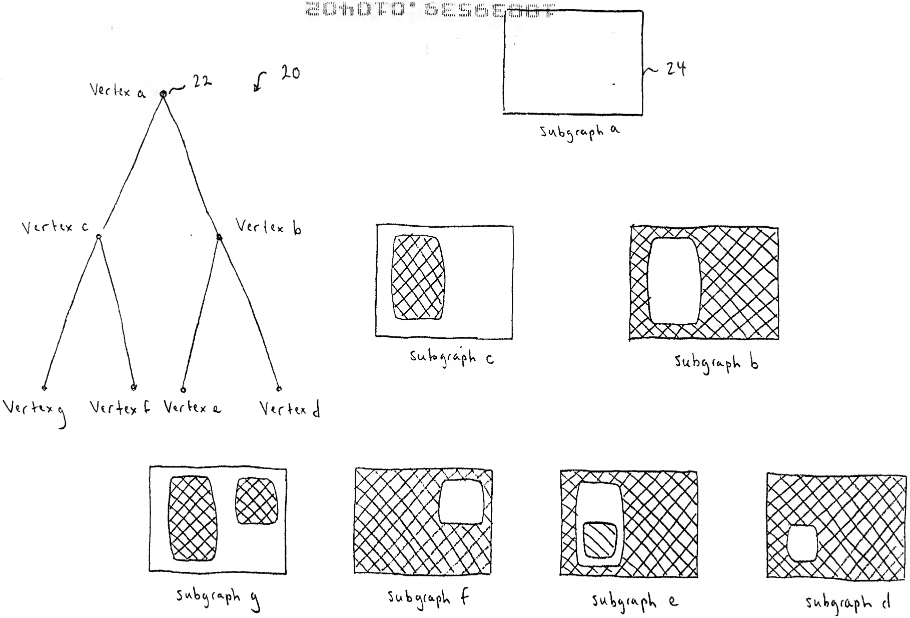

20
Vertex a
22
Vertex c
Vertex b
Vertex g
Vertex f
Vertex e
Vertex d
24
Subgraph a
Subgraph c
Subgraph b
Subgraph g
Subgraph f
Subgraph e
Subgraph d

FIG. 3

30

Node No.	Vertex of recursive decomposition tree
N1	Vb
N2	Vb
N3	Va
N4	Va
N5	Vb
N6	Vd
N7	Vd
N8	Vb
N9	Va
N10	Vg
N11	Vg
N12	Vc
N13	Vc
N14	Vf
N15	Vf
N16	Vc

FIG. 4

32

Vertex of recursive decomposition tree	Depth in recursive decomposition tree
Va	0
Vb	1
Vc	1
Vd	2
Ve	2
Vf	2
Vg	2

FIG. 5

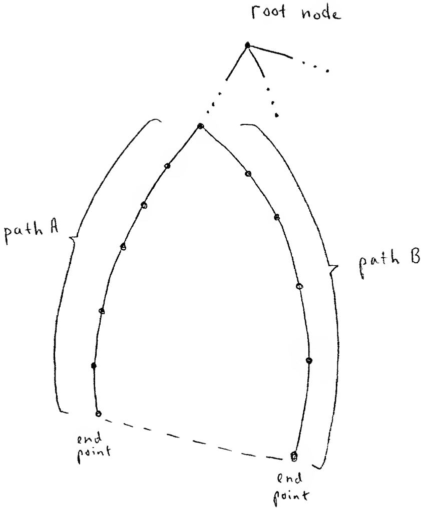


FIG. 6

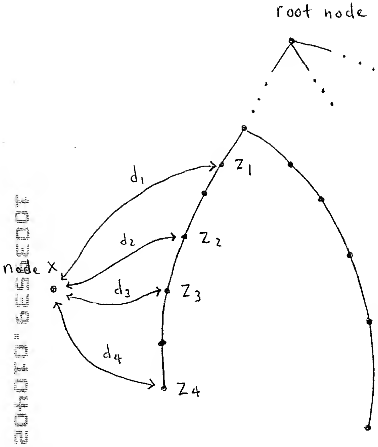


FIG. 7

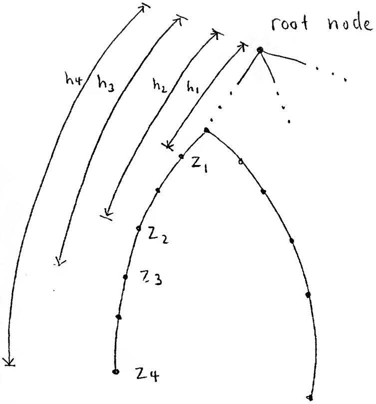
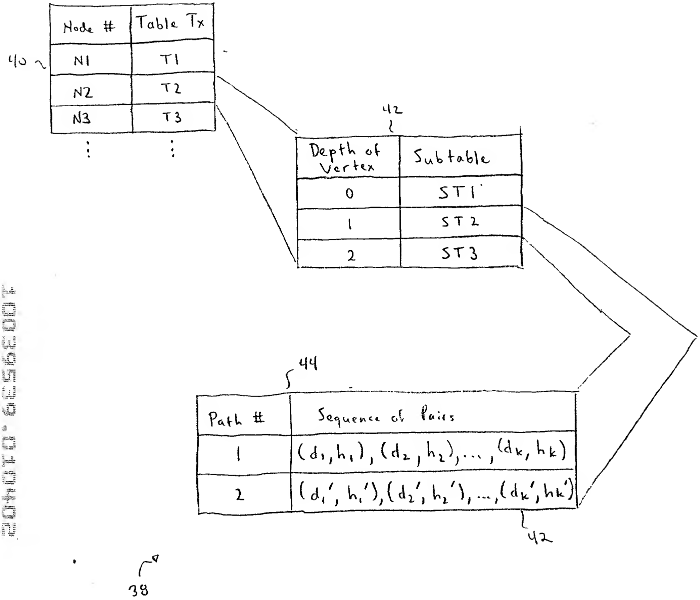


FIG. 8



Node #	Table Tx
N1	T1
N2	T2
N3	T3
⋮	⋮

Depth of Vertex	Subtable
0	ST1
1	ST2
2	ST3

Path #	Sequence of Pairs
1	$(d_1, h_1), (d_2, h_2), \ldots, (d_k, h_k)$
2	$(d_1', h_1'), (d_2', h_2'), \ldots, (d_k', h_k')$

FIG. 9

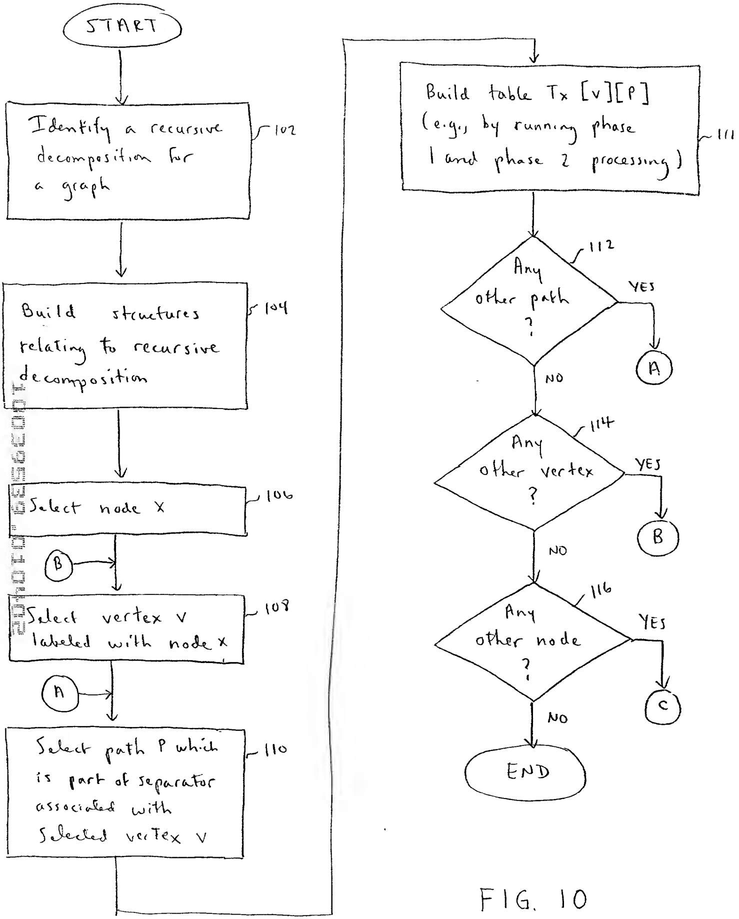

START
Identify a recursive decomposition for a graph
102
Build structures relating to recursive decomposition
104
Select node X
106
B
Select vertex v labeled with node x
108
A
Select path P which is part of separator associated with selected vertex v
110
Build table Tx [v][P] (e.g., by running phase 1 and phase 2 processing)
111
Any other path ?
112
YES
A
NO
Any other vertex ?
114
YES
B
NO
Any other node ?
116
YES
C
NO
END

FIG. 10

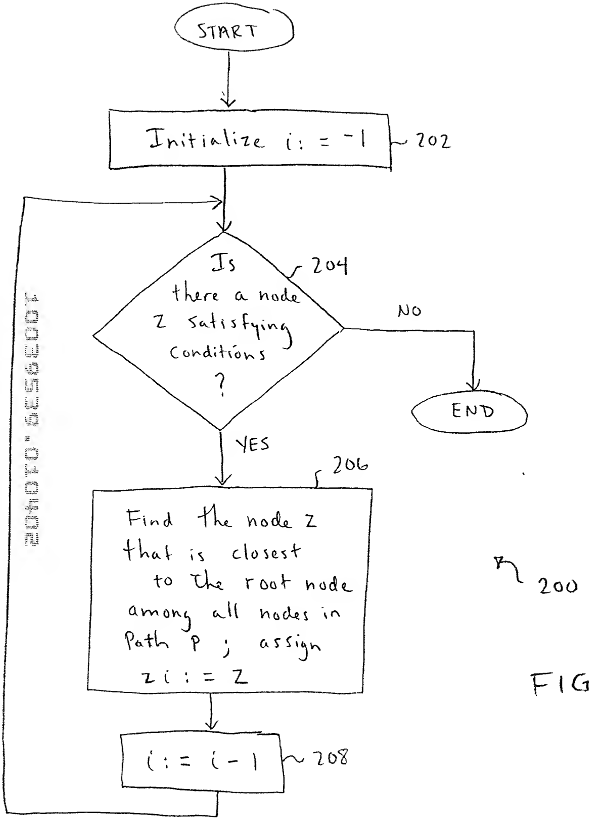

START
Initialize i: = -1
202
Is there a node z satisfying conditions ?
204
NO
END
YES
206
Find the node z that is closest to the root node among all nodes in Path p ; assign zi := z
208
i := i - 1
200

FIG. 11

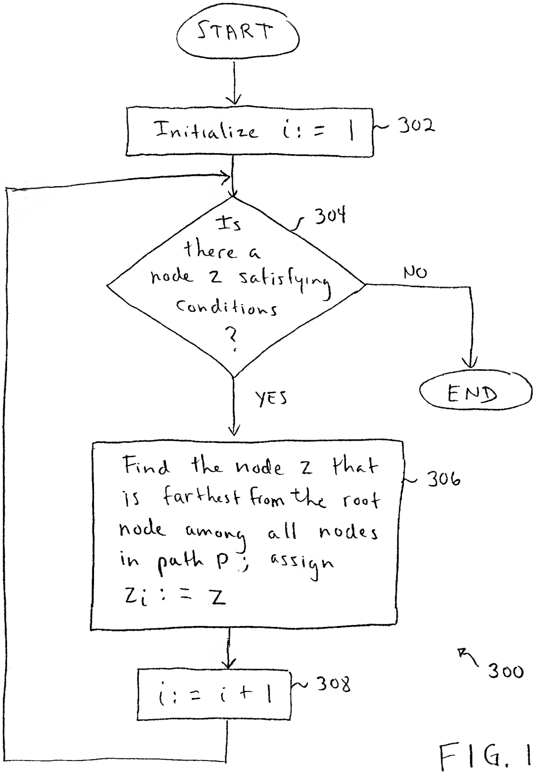

START
Initialize i: = 1
302
Is there a node z satisfying conditions ?
304
NO
END
YES
Find the node z that is farthest from the root node among all nodes in path p ; assign $z_i := z$
306
i: = i + 1
308
300

FIG. 12

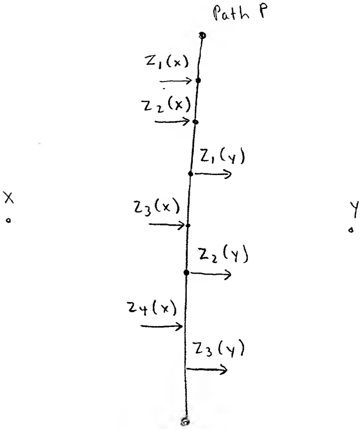


FIG. 13

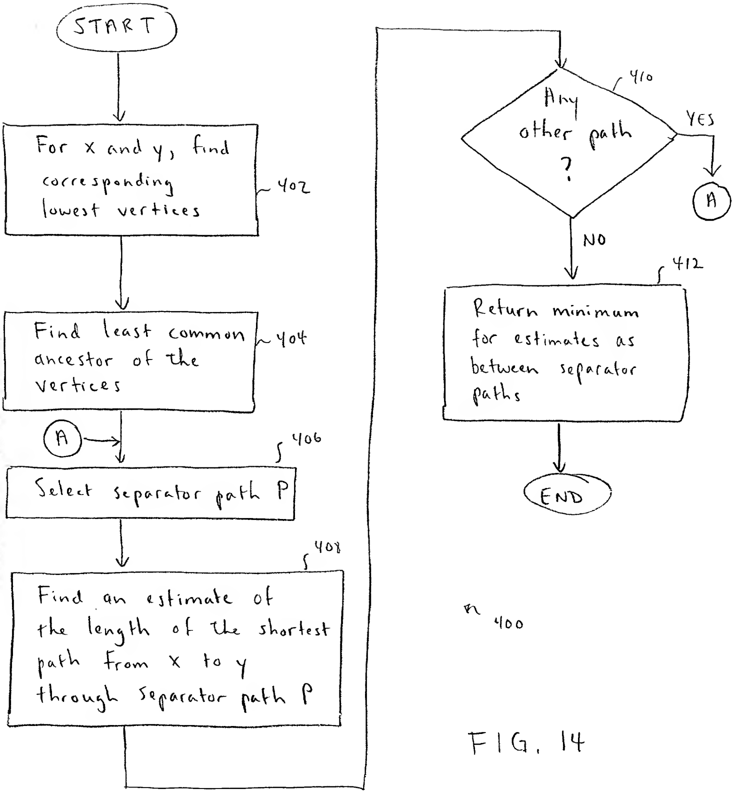

START
For x and y, find corresponding lowest vertices
402
Find least common ancestor of the vertices
404
A
406
Select separator path P
408
Find an estimate of the length of the shortest path from x to y through Separator path P
410
Any other path ?
YES
A
NO
412
Return minimum for estimates as between separator paths
END
400

FIG. 14

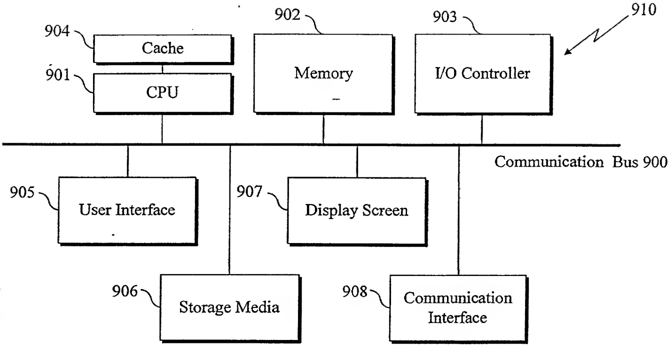


FIG. 15A

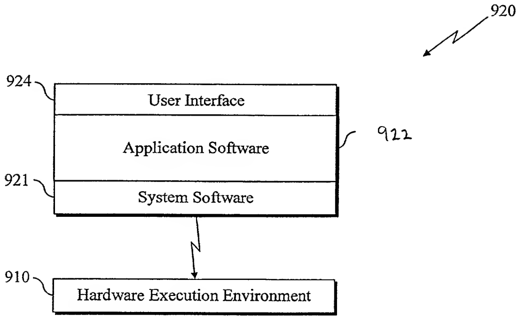


FIG. 15B